

## APPENDIX 3

### SMALL MAMMAL SURVEY RESULTS FOR AREA 50, NORTHWEST FIELD

**PERIOD COVERED:** February 1997

#### SUMMARY

This report summarizes the initial trapping period for small mammals conducted at Area 50, Northwest Field, Anderson Air Force Base, Guam. Area 50 is an isolated 24-ha plot of native limestone forest, and is surrounded by a 2-m-tall chain link fence and old runway tarmac. The area has been proposed for the recovery of several native species including Guam rail (*Gallirallus owstoni*), Mariana crow (*Corvus kubaryi*), Micronesian kingfisher (*Halcyon cinnamomina*), and the fire tree (*Serianthes nelsonii*). Plans include the eradication of deer (*Cervus mariannus*), feral pigs (*Sus scrofa*), and brown tree snakes (*Boiga irregularis*).

The purpose of this study is to collect baseline data on small mammals in the area, including species presence and relative abundance, and to document changes in these parameters coinciding with the removal of brown tree snakes. There is the potential that the small mammal population could significantly increase following snake removal from the area (E.W. Campbell, pers. comm.). This increase could have a potential negative effect on any birds released into the area, as one rat species in particular (*Rattus rattus*) is a potential predator of both eggs and chicks (Atkinson 1985). Plans include repeating the survey every 4-6 months to document changes in occurrence and abundance of small mammals coinciding with removal of brown tree snakes.

#### METHODS

Surveys were conducted between 13-16 February 1997. Two transects were established that bisected each other and ran north to south and east to west (Figure 1). Each transect was 700 m in length. Trap stations were placed at 25-m intervals along each transect for a total of 28 trap stations per transect and 56 stations combined. Three snap traps were placed at each station for a total of 168 traps. One large rat trap was placed in a tree 0.5-1.5 m above the ground on the main trunk and a second large rat trap was placed on the ground. A smaller snap trap was also placed on the ground at the trap station. Target species included the roof rat (*Rattus rattus*), Polynesian rat (*Rattus exulans*), and musk shrew (*Suncus murinus*). Other potential species that could be captured include the Norway rat (*Rattus norvegicus*) and house mouse (*Mus musculus*). Traps were prebaited for 2 nights with fresh coconut. Following prebaiting, traps were baited each afternoon between 1500-1700 hr with fresh coconut dipped in peanut butter for 4 consecutive days. Traps were checked each morning between 0700-0900 hr and disabled until they were baited again that evening. Sprung traps, traps that had their bait missing, or traps that captured non-target species (i.e., hermit crabs [*Coenobita* spp.], coconut crabs [*Birgus latro*], marine toad [*Bufo marinus*]) were excluded from analysis. Trapping results (Table 1) are presented as rats caught per trap night (Dice 1931) and rats caught per trap night corrected for sprung traps (Nelson and Clark 1973).

## RESULTS AND DISCUSSION

No small mammals were captured during 540 trap nights (Table 1). C. King (unpublished data) found similar densities (1 rat/100 trap nights) in an area of second growth forest in Northwest Field during June 1994. Campbell (1996) found snake densities to be as high as 34 snakes per ha on Northwest Field. This high density of snakes suggests they keep small mammal populations near zero, or at least undetectable with our trapping method. Campbell (1996) found increased rat damage to his nylon fencing on Northwest Field following removal of brown tree snakes from study enclosures. Thus, it is possible that small mammal densities will increase dramatically following removal of snakes from Area 50. Continued monitoring every 4-6 months will be necessary to document changes in occurrence and abundance of small mammals in the area in relation to removal of brown tree snakes.

Table 1. Results of snap trapping surveys to assess occurrence and abundance of small mammals in Area 50, Northwest Field, Guam, from 13-16 February, 1997. † = Transect Trap Length (m); ¢ = Trap Type; N = Nights; £ = Trap Success; æ = uncorrected/100 trap nights; and ¤ = corrected/100 trap nights.

<b>FEB</b>							
<b>DATES</b>	†	¢	Trap	N**	£	æ	¤
13	1400	RT	55		0		0
		RG		50		0	0
		MG		43		0	0
14	700*	RT	28		0		0
		RG		24		0	0
		MG		21		0	0
15	1400	RT	56		0		0
		RG		55		0	0
		MG		47		0	0
16	1400	RT	54		0		0
		RG		55		0	0
		MG		52		0	0
<b>TOTAL</b>				540			

Key to Trap Types: RT = Rat Tree; RG = Rat Ground; and MG = Mouse Ground.

\*Only one 700 m transect was run. \*\* Corrected for closed traps.

## ACKNOWLEDGEMENTS

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## LITERATURE CITED

Atkinson, I.A.E. 1985. The spread of commensal species of *Rattus* to oceanic islands and their effects on island avifaunas. Pp. 35-81 in Moors, P.J. (ed.). Conservation of Island Birds. International Council for Bird Preservation Tech. Publ. No. 3.

Campbell, E.W. III. 1996. The effect of brown tree snake (*Boiga irregularis*) predation on the island of Guam's extant lizard assemblages. Ph.D. dissertation, Ohio State Univ., Columbus, Ohio.

Dice, L.R. 1931. Methods of indicating the abundance of mammals. J. Mammal. 12:376-381.

Nelson, L., Jr. and F.W. Clark. 1973. Correction for sprung traps in catch/effort calculations of trapping results. J. Mammal. 54:295-298.

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